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duced into the circuit with the magnet, each vibration of the tuning-fork causes an advance of the pointer one degree on the dial. The observer switches the fork into the circuit as the stimulus is applied, the subject switches it out when he feels the stimulus, and the time consumed is read off in the number of tuning-fork vibrations shown by the dial; *e. g.*, in hundredths of a second, if a tuning-fork making 100 vibrations a second is used, as in Dumreicher's experiments.

The aim of the experiments was the development of a method that should be simple enough, and at the same time give regular enough results, to make reaction-time tests readily useful in the clinique and laboratory. The recommendations are as follows: 1, Use a strong electric stimulus at the end of the finger with which the reaction is executed; 2, react by withdrawing the finger; 3, use for the warning signal a sound of short duration given 2 or 3 seconds before the stimulus; 4, take the single reactions in sets of 10, at 10-second intervals, with several minutes' rest between the sets; 5, in training the subject always tell him at the time the amount of each reaction; 6, in drawing the mean disregard the first 3 or 4 (always the same number) of the series. The reactions by withdrawing the finger are not only more regular but shorter by 0.03—0.04 sec. than those by pressing the key, probably because more nearly like the natural reflex retractions.

The Time-relations of Mental Phenomena. JOSEPH JASTROW. Fact and Theory Papers, No. VI, published by N. D. C. Hodges, N. Y., 1890, p. 60.

Those that are familiar with Prof. Jastrow's unusual skill in presenting the results of psychological experimentation in concise and intelligible form, need not be told that this little monograph is excellent in both respects. We have no hesitation in saying that it is the best general account of the subject extant, both as regards the maintenance of proper perspective and as regards the extent and freshness of the material gathered. The book provides for those that wish to consult original sources by a classified bibliography of some fifty-seven titles. It should be useful to all those that contemplate psychology from the experimental or clinical side.

IV.—MISCELLANEOUS.

The Principles of Psychology. By WILLIAM JAMES, Professor of Psychology in Harvard University. Henry Holt & Co., 1890. Two volumes, pp. 689 and 704.

This long promised, long delayed book appeared in October last. Its size and the volume of matter it contains as well as its rare vigor and acumen makes the task of the conscientious reviewer hard.

Important as are our differences *in re*, and abrupt and summary as space limits compel us to seem *in modo* let no reader forget that gratitude and admiration are predominant. Our indebtedness for stimulus and self definition to both the man and his book are very great.

The book opens with an excellent chapter on the functions of the brain¹ which is a good illustration of the way in which such subjects as speech disorders, reaction-times, the psychology of vision, the phenomena of suggestion and trance, the psycho-physic law, etc., should have been handled, instead of being broken up and treated, parts here, parts there, torn from their natural and usual connections to be brought to bear upon the speculative controversies in which the author's interest centres. Habit is then treated in a general yet chiefly hortatory way. We are told to do something every day because we do not wish to do it to keep the faculty of *effort* (one of the supremest things in this treatise) alive. We must begin early and hand over all we can to our automaton. In treating the automaton it is urged that the mind is not an epiphenomenon. If feelings cannot

¹ See page 551 in this number of the JOURNAL.

cause nerve action they cannot cause each other, but however inwardly rational they can only be juxtaposed, the brain's "hair trigger organization makes it a happy go lucky, hit or miss affair." "It is as likely to do the crazy as the sane thing." Consciousness is "an organ added for the sake of steering a nervous system grown too complex to regulate itself." Consciousness has causal agency and loads the dice or tips molecules, and this is why it is most intense where nerve processes are most hesitant.

Although metaphysics, which "spoils two good things when she injects herself into natural science," (preface, vi) is expressly and often excluded, chapter VI, is announced as "exclusively metaphysical." Flick's heat summations, tone sensations due to individual vibrations, Spencer's theoretical primordial nervous shock, etc., are all physical integrations below the threshold of consciousness. Even lemon and sugar are not present in the taste of lemonade, but an entirely new taste. If elemental psychic units existed they could never associate or communicate. The Helmholtz-Wundt conception of unconscious inferences, somnambulism, Leibnitz *minimum visibile et audibile*, all notions of nasence or continuity between brain and mind states, material monadism or polyzoism with one arch pontifical cell, etc., are all denounced more than refuted, as either "one tissue of confusions," or "pure mythology" on which comment "seems hardly called for," a "tumbling ground of whimsies," a "bog of logical liquefactions," illustrating the "silliness of the mind-stuffists, or a temper with which the authors cannot contend and best left to its devices," "where Spencer fairly outdoes himself in vagueness" or "well illustrate the scandalous vagueness with which this sort of chromo-philosophy is carried on," or are "unintelligible and fantastical," and "it is hard to believe that intelligent men could be guilty of so patent a fallacy." Such phrases are applied not to, *e. g.* Mr. Cockayne's Leechdom, Wort-cunning and Star-craft, a strange collection of old wives' cures, but to the views now inclined to by many if not most of the best men of science, and do not suggest the philosophic temper or poise. Split-off consciousness, instant and total forgetfulness may explain much, but when we are told that psychic elements can never really combine, that atoms of feeling cannot compose higher feelings any more than atoms of matter compose physical things, that the entire brain process is not a physical fact at all, I. 178, we simply re-read but do not fully understand how the author knows.

In *the stream of thought*, Ch. IX, where the mind is first studied from within, Dr. James warms to his subject and is perhaps at his best. This is in some sense the key-chapter to all the rest. *It thinks* is the first and simplest fact for psychology. These series of unorganized impersonal thoughts are seen in trance, disaggregated and unowned, but always tend to be parts of a personal consciousness. Whether we personify the procession of thoughts, or that procession is the self, each train of them is isolated by one of "the most absolute breaches in nature" from all other selves. The thoughts in the stream are in ceaseless Heraclitic flux, and the same thought or sensation is never repeated [Hodgson]. The objects only are the same but no two psychic impressions of or brain states caused by them are the same. The successive ideas of the same thing have no identity. Their instant *esse* is *sentire*. They are as they are felt. Dimness and clearness do not pertain to states of mind but only to the objects they stand for. The minimal psychic fact which is closest to any brain state is the entire thought, for mental chemistry and psychic synthesis are denied. Contrast is invoked, and it is even said that a telephone plate thrills for years yet never reduplicates its inward state to prove the exiguous point that the notion of identical ideas or impressions which re-appear is a myth. Despite time-gaps the

thought procession connected with each self is a continuum. The train is not chopped up but inwardly connected as parts of a common whole called *I* or *me*. Even in the greatest contrast the joint or link between the two contrasted members is a part of consciousness. The stream is "made of an alternation of flights and perchings." The perchings represent sensory, images objects, and as substantive are contrasted with the transitive flights. (This happy form of statement should have been credited to Wundt.) The flights are very hard for introspection to catch or name while the perchings are easy so that a sensationalism which denies feelings of relation as Hume did is easier than to ascribe it to an *actus purus* of reason. Vocal inflections, adverbs, prepositions, conjunctions, interjections, various signs of direction and grammatical tendencies abundantly prove these dumb relation-feelings. Words have both static and dynamic fringes or overtones of relationships, and these may be the same for verbal, or visual imagery [Galton]. Thought is an algebra of relations, [Berkeley], and while the assigning of values to the symbols is like the perchings of thought, it is the fringes and transitive elements that make it a continuity. The reason why we come to think that our thoughts have "extra mental duplicates" or objects corresponding to them is that thoughts of many selves have the same objects. If *my* thought has the same object as *his* we believe it objective and real. Hence the great importance attached to *sameness*. In swoon there is a sense of being, or objectivity is general without any sense of self, which latter is added on awaking. Hence the sense of the object is first, and knowledge that we know it or the consciousness of self is not primordial, so that all who like Green say that to know and to know that we know are identical are wrong, and thought may or may not discriminate between the object and itself. The object is not the nucleus of a state of consciousness but all that the thought thinks just as it is thought, hence introspection can only gather up a few of the crumbs later. Again there is no Kantian *manifold* but all that is thought is in a single unitary pulse. The idea of a pack of cards is not a pack of thoughts and our notion of a large number or an army is one feeling. In the simplest sentence the states, tensions, halos, fringes, change with every word. The words are consubstantial with the idea and not over against it as Egger holds. Again some objects in the stream are emphasized and selected by attention. Our very senses are organs of selection ignoring some wave lengths and many subjective phenomena, and making what we call things out of the chaos of sensation. Reasoning, aesthetic activities, and supreme ethical choices are other forms of selective action which altogether have given us our physical, mental and moral world by filtering it out of the primordial sea of sensations and atoms, and dichotomizing and setting it over against each of the many selves whether of worm or man as its world: All this because we cannot disperse attention evenly over all objects but must inhibit, ignore, eliminate, unite series of uniform strokes to rhythm, and make and then break up totalities, etc.

We now see the author's idealism. It is the phenomenalism of Hodgson and Renouvier emphasized till the very states of consciousness seem so real as to have causal force, or the realism of Herbart with his physics and mathematics and indeed all exactness taken out. Waving this, he is too eager to use abnormal experiences as yet only tentatively explained to help out both the theory of impersonal thoughts, pp. 226-9, and of object-knowledge as primordial p. 273. In recent physiological grammars the forms and acts of the "sentence sense" are explained in a simpler, more complete and exact way than by these "fringes," "relation feelings," transitive and other processes. For Hartmann these are among the strongest proofs and types of his "unconscious." Who can decide; and why force this irrelevant issue? Nor can we harmonize

the contentions for the consubstantiality of idea and word with the distinction drawn between mind states and objects, or with any theory of sameness. There is no possible test to decide between Egger and James and why force facts to fit with theory? That contrast is a "joint" is good Hegelism.

Ch. X. The description of the social, spiritual and pure self, of rivalry, self-seeking and feeling are delightful and picturesque. The nuclear self of minimal primary tensions and reactions (which are very different from Wundt's apperceptions with which they seem to be identified) does not preclude a back-ground self which may become its own object. The central self of selves, the shepherd or "herder" of the thoughts, etc., is not needed to explain the facts of consciousness. Better an *anima mundi*. The self is the passing thought, differing each moment but appropriating the thought of the past moment and all it had. The thought is itself the thinker. The author declares himself "persuaded by abundant acquaintance with the trances of one medium that the 'control' may be altogether different from any possible waking self of the person. In the case I have in mind it professes to be a certain departed French doctor, and is I am convinced acquainted with facts about the circumstances, and the living and dead relatives and acquaintances of numberless sitters whom the medium never met before and of whom she has never heard the names." [I, 396.] Various facts in the Lurancy case "increased the plausibility of the spiritualistic interpretation of the phenomenon."

In this chapter the author fails to utilize the great ethical opportunities he makes so much of in treating habit. Poor Kant's "cheap and nasty editions of the soul," concerning which his "unintelligibilities became quite paroxysmal," is called "as ineffectual and windy an abortion as philosophy can show."

Chapter XI. Brain cells may be excited from within by other brain cells or perhaps by spiritual process. Attention is the nucleus of our inner life, and volition is "nothing but attention." The central question in this chapter is the "metaphysical as well as psychological one whether attention involves a principle of spiritual activity. This is pivotal, the very hinge on which our picture of the world shall swing from materialism, fatalism, monism, towards spiritualism, freedom, pluralism, or else the other way." The cause theory is held to as opposed to the effect theory. The feelings probably result dynamically upon the cell activity. Attention is an original force. He "counts himself among the believers in a spiritual force," and those who do not are "intensely reckless" and are charged with strange arrogance.

The chapters on Discrimination and Comparison, and on Conceptions need not delay us. The latter are unchangeable and nothing can be conceived of twice alike. No concept can ever change into another but remains eternally what it is. An idea neither is what it knows or knows what it is. Difference is a sensation. When we say A differs from B, we do not compare two distinct ideas but the different-sameness is one unique pulse of thought, I, 500 *et seq.* Each thought is a continuum, a plenum, needing no contributions from another. Fechner's psycho-physis law.—explained only in the most generic and summary way—is "amusing," a "patient whimsy," "dreadful literature," and its outcome is just "nothing," etc. The pregnant and far-reaching idea of the *threshold* (as irreconcilable as are "fringes" and transition states with the basal position of the "mind-stuff" chapter), the exact and patient experimentation which lifted a whole section of psychology to the plane of science by enabling it to re-identify psychic states (no two of which can be identified according to Dr. James) combine to make this field the most critical of all for his basal assumption, as its methods are most contrasted in thoroughness and exactness with his. Old

Caspar's house was on the battlefield of Blenheim as Dr. James' system is in the field of this discussion. But we should expect the latter's explanation to be more intelligent than Caspar's, because the psychophysical battle is still undecided, but it is scarcely more so.

Association is not of ideas but only of objects thought of. It is of course all on the plane of consciousness for all psychic synthesis out of ulterior simple elements was denied in Chap. VI. Here neural action is chiefly invoked, yet "possibly these will not suffice and we shall need to invoke a dynamic re-action of the form of consciousness upon its content." Even in voluntary association the order of presentation of mental material is "due to cerebral physiology alone." Contiguity and similarity of ideas can only exist after the association is done. Similarity does not exist till both things are there, so it cannot be an agent in producing anything. The object may bear any relation whatever to that which suggests it. Herbart is "repulsive, almost hideous," because each idea is regarded as an entity out of consciousness and their struggle and inhibition are too mechanically conceived. In a word the brain produces all sorts of ideas in all sorts of directions and consciousness afterwards classifies the links as best it can.

We have a unique feeling of pastness, Ch. XV, to which every feeling in turn falls a prey. This is a simple feeling or state as is the feeling of difference or of space, but of another quality. To successive feelings, a feeling of their own succession must be added and treated as another fact. The "specious present" is the few seconds that can be steadily intuited at once. This immediately-known time is the type and measure of all conceived times. An "over-lapping of brain processes" said to be related to after-images and to serve in some sense as a temporal sign is invoked to explain the feeling of duration. So primary memory, Ch. XVI, is of the nature of an after-image or after-consciousness. Secondary memory has an additional consciousness of previousness added to knowledge. There is no revival of an image, but there is a "second event, having absolutely no connection with the first save that it happens to resemble it." The tick of the oldest clock does not become aware of past ticks because these are physical and not psychic objects. It must be referred to the past and to *my* past to be memory. Both retention and recall are caused by the habit of the nervous system working by association, but even the brain states excited by an event and by its recall differ.

After inner comes outer perception and first sensations. The latter are marked by "extreme simplicity" and their natural history and classification is entirely omitted. There are no pure sensations at least after the first day of life. The infant's first sensation is the universe. The knower greets the world in the miracle of knowledge. Contrast, which shows that sensations are not immutable psychic things, is physiological as Hering says and not psychological as Helmholtz thinks. Sensations do not appear first as internal and get afterwards projected outward, but only get translated and "shoved further off." From the first they have a roomy and spatial character and that independent of other sensations. The assumption that because bodily processes cause, they must also seem to be the seat of sensation is false. Subjectivity is one of the latest notions to be acquired. Copies of sensation may re-arise—the neural processes which underly imagination, starting in the brain, may excite sense organs. So imagination differs from sensation only in intensity and not in its locality. Vague images are not general notions. "Perceptions are not inversely as sensations and differ from them by the consciousness of further facts associated with the objects of the sensation." The escort of revived sensations are integrated. Not sense but intellect accounts for most fallacies of sense. Most of what we perceive comes not from the object

but from our own head. Hallucination may probably be centrally initiated. Perception is not an unconscious inference but a brain product, and both it and hallucination are elaborately explained as such. Apperception is but little more than mentioned.

The perception of space starts from a feeling of "crude extensivity," involving the third as well as other dimensions. All our sensations are inexplicably extensive but do not all contribute to space perception. The hypothetical feelings arising from joints play the chief rôle in the development and discrimination of space perceptions and the muscle-feelings play no appreciable part in it. Discriminative attention subdivides the total dermal or retinal bigness by the aid of movements. The different space senses are at first incoherent and must be compared, reduced to a common standard, added etc., and very gradually the world of space as we now know it is evolved. An admirable rehearsal of many facts of visual space is made in an attempted refutation of Helmholtz' statement that the present sensation is a sign the interpretation of whose meaning is left to the understanding. This James declares is irreconcilable with all his sensationalism and insists that the understanding does nothing but recall, and produces nothing. This space chapter is one of the best in the book, but in the latter point falls short of carrying conviction.

Ch. XXI. The sense of our own bodily existence is the nucleus of all reality or belief. Any object which remains uncontradicted is *ipso facto* believed and posited as absolute reality. Real things are reductives of things judged unreal. (Taine.) There are seven orders of reality or worlds to which all gets referred. Reality coerces attention, stimulates will, is vivid, rouses emotional interest, etc. The objects to be chosen as realities are still under debate, but the perfect object of belief would be a God or soul of the world, good and explaining our experiences. This would account for all science and history in the deepest and simplest way. The primitive impulse is to affirm and doubt arises later. By acting as if a thing were real we can make it so for us. Will and belief are the same. The moral "improvements" of this chapter are interesting and impressive.

In Reasoning we pick out essential qualities first from receipts or generic ideas. An extracted character suggests a consequence more than does the whole object. Genius extracts fitting characters. The sagacity of animals is all accounted for by contiguous association while man associates by similarity. Genius does so in a great degree. This is a very inadequate chapter, abounding in animal stories, definitions of a gentleman, difference between men and women, and in view of the treatment this subject deserves, is not worthy of serious criticism. It is mainly an old paper printed under another title a dozen years ago.

A brief physiological chapter is inserted to illustrate how every feeling produces a movement with wide reverberations. Knee-jerk, sweat glands, bladder, bowels, uterus, circulation—all being affected.

The transiitiveness of instincts and their inhibition by habits is shown, and this is followed by a description of a number of human instincts. Instincts conform to the reflex type, the nervous system being a pre-organized bundle of such reactions. Only a mind debauched by learning can ask for the why of any instinctive human act, II, 387. It is mainly a mere excito-motor impulse due to a pre-existent reflex arc. Man has all the instincts that brutes have and many more concerning which there is much good æsthetic writing. The author is intent on contrasting rather than paralleling human and animal instincts. Instincts shade imperceptibly into emotions which are consequences not causes of bodily expression. They cannot be divorced from sensational processes. Abstract the bodily symptoms from any strong emotion and

it goes with them. It seems to be even admitted that a totally anæsthetic person could have no emotions. The objections that we may act emotions and not feel them, and that expressing emotion checks it are in our judgment not at all met, and to hold that emotions are due to inhibited reflex and impulsive tendencies, would be nearer the truth. Some emotions the author holds can be explained but many, "nay the entire æsthetic life of man" is of accidental origin—love of music as well as sea-sickness, etc.

Will, Ch. XXVI, acts on the ideas of many movements left in memory by the reflex performances of our automation. It can reconstruct these elements but create no new ones. The kinæsthetic idea of what the act is to be is made of memory images of afferent sensations arising from previous motions. Feelings of out-going energy or of innervation are denied (Münsterberg), first on a priori grounds. Introspection also does not find them. We only anticipate the sensory consequences of movement and there is a fiat that these shall become actual. Thus sensationalism is made rich, not degrading, and spontaneity and choice are reserved for spirit, II, 518. Even the visual or auditory effect of a movement may be its mental cue. Sometimes the mere thought of a movement is sufficient to produce it if there is no conflicting notion, and it always tends to do so, as in mind-reading. In deliberative action there are five types of decision. Consciousness in its very nature is impulsive. Pleasure and pain are not the only springs of action, and effort of attention is the essential phenomenon of will. Will is the relation between the mind and its ideas. To these the will is always directed and the only resistance we can feel is the resistance an idea offers to being attended to at all. Consent is to fill the mind with an idea. The sense of effort, which appears in the fourth and fifth types of decision, brings us to things metaphysical and spiritual. While as a science psychology may hold to determinism and thinking as an immaterial process *goes on*, it is effort-choices that bring in the wider order on which science has no claim and which lead the author to declare for freedom. Yet free will involves only the *amount* of effort of attention.

After a chapter on hypnotism which is evidently very hastily written and is meager and inadequate, comes the long and final key chapter of the book on necessary truths and experience. Elementary feelings are innate, so it is their combination that is involved. The mind has a wealth of native forms, pre-established relations, ideal inner pure apriori rational principles, concerning which we can know nothing save that they did not originate from experience. These embrace *pure* sciences, all of which are exclusively results of comparison, such as classifications, all judging, predicating and subsuming, number relations and geometrical form, metaphysical, æsthetic and moral principles. To argue that these are in any way dependent on individual or ancestral experience is untrue, and so unintelligible that it is hard to understand how such shallow and vague accounts of them as Mill's and Spencer's could ever have been given by thinking men." The attempts of Helmholtz and others, to connect geometric axioms with experience is not here referred to, perhaps because the vocabulary of denunciation is exhausted. Experience is restricted to time and space and these are no less arbitrarily narrowed to their very lowest range and potency. All necessary truths, higher powers, and even all natural science, arise as "back-door processes" which modify the brain but give no cognition of themselves as opposed to experience, or impressions from something foreign (as natural objects to which the mind is passive and fatally servile). "Back door" is Dr. James' term for Darwin's accidental variations or Spencer's indirect equilibrations which are due to autogenous brain growth. Here belong freaks, sports, flashes of wit, and of dis-

coveries or lucky fancies, susceptibility to music, sea-sickness, drunkenness, the temperament of genius, idiosyncrasy, as well as love, pleasure, pain and elementary sensations. All enter by the "back-door." Necessary truths are products of these accumulated spontaneities. They are as by divine fiat, or even deity could give no explanation of them; some of them are barren and abstract and verbal enough in their "pure" forms to have little interest save to a sublimated scholastic mind, and in fact are treated in extenso here in violation of the author's own worthy purpose in his preface to keep metaphysics out of psychology. But when he brings into this transcendent realm of necessary truths of which we know nothing save that they are absolutely independent of all repetitions or ancestral experience, all the choicest results of science which were attained by breaking away from mere experience, which is a chaos of fragmentary impressions of sense, which we can never know as they are to the ideal world of atoms and molecules, etc., which can be of moral and æsthetic truths which cannot be tested yet which we hold to as a creed, and which itself is finally said to have nothing to do with experience save to coerce facts of sense under its rubrics, and to be so supernally rational that even cause seems but an altar to an unknown deeper connection; we realize with sadness and regret how remote from most ideals and endeavors of empirical science in this field this vigorous and able writer has cast his anchor. If Weismann's atavism, and the mixing of sperm and germ cells early separated from somatic cells, concerning which morphologists are now about evenly divided, be true, the influence of the environment only becomes selective rather than causative. For Weismann variation is indeterminate and so far from accounting for anything necessary or eternal may conceivably give brain growth, or "back doo"r processes of a nature so entirely different that it is idle to speculate concerning any selective results. Both logically as well as historically, all schemes of necessary and eternal truths have more affinities with Lamarck or pre-evolutionary fixed types and species. It is idle to affirm whether the same truths or very different ones would issue from other lines of evolution.

Passing now to *the work as a whole* the author might be described an *impressionist* in psychology. His port-folio contains sketches old and new, ethical, literary, scientific and metaphysical, some exquisite and charming in detail and even color, others rough charcoal outlines, but all together stimulating and suggestive, and showing great industry and great versatility. The important works of art and science have usually been done by men who sink their personality in their work. These traditions of self-effacement are effete for our author, who tells us incidentally of his age, of his early school life, his daily habits, tastes, etc., and unintentionally compels the reader to imagine that he is the hero of many more of his stories and illustrations than is probably the case. His favorite theme, conscious states, also contributes to give the book in places a Rousseau like—we had almost said Bashkertsieff like—confessional flavor. Its personal frankness, which also accounts for such denunciatory epithets for divergent psychologists as we have quoted, is unequalled in the history of the subject. Indeed so saturated is the book with the author's personality even where he is not consciously recording a "personal confession," or a bare "opinion" as in I, 396, that those who do not know him will misconceive much in it, while for those who have known him it will be the key to a personality of rare accomplishments and attractions, as well as no less rare frankness.

The passing thought, feeling, or sensations or in a word *conscious states* are the basis of all. The spacial *quale* originates in a feeling of crude extensity involving all three dimensions. Time is rooted in a

feeling of succession or elsewhere a feeling of duration. Imagination differs from sensation mainly in intensity. Comparison rests on difference-sensations and may involve a feeling of difference-sameness. There are also relation feelings, and these are involved in perception which is a larger sensation. The components of voluntary motion are anticipations of the sensory consequences of the movement and a feeling of effort. These cannot be analyzed or classified. They are as ultimate as necessary truths concerning which it is as idle to speculate, as concerning instinctive and reflex acts. Only a mind "debauched by learning," or as the fakir would say, II, 641, learned in the things he cares not for, would examine to these idola. Emotions rest on bodily sensations and are as unaccountable as accidents, sports, freaks, "back door" processes or sea-sickness, love of music, or the taste of lemonade which is not made of sugar or lemon, but is a new independent sensation.

States of consciousness are the warp and woof of all. No anatomist ever loved to trace tissues more than Dr. James delights to dissect these states in their ramifications. They are described from all moods and in all manners, and dilated upon as fondly as "the water that comes down at Lodore," or as a programist grasps in all directions for tropes to describe in words the nature and effect of each phrase of a sonata. He has a veritable genius for turning inward and catching these states on the wing, and for describing them graphically. Thus he makes of introspection not dogma but literature as it should be; literature not only very rarely dull (which is saying much in this field), but often highly spiced with well stored anecdotes, *bonmots* and sudden surprises, and not infrequently delightful and almost superb. In pursuit of these he is led farthest from the main line of his argument and it is novelties both of thought and expression here that are most striking and will linger longest in the reader's mind. Conscious states flow along now slowly, now rapidly, now perching, now flying. They associate themselves, summate past states, are herded, massed into an unitary object for a thought which may have become a thinker, or even a self. These are in closest apposition to brain states and to objects, mediating between these and soul *per se*. It is these that are real enough to act causatively upon brain molecules. This general standpoint sometimes called phenomenalism in Hodgson and Renouvier becomes as we said, impressionism in Dr. James. No two states can be the same, it is repeatedly said, and it is impossible to make any exact coherent statement of Dr. James positions. There are passages where these seem the only reality and not only human faculties, but soul, outer world, brain included, seem to have no reality save that which these confer, but this is by no means the dominant standpoint. His external world is not lacking in reality at least from the psychological standpoint.

In closest relation to feelings and to conscious states are brain states or neural processes. Although the usual chasm of incommensurability is emphasized, these play a rôle second only to consciousness itself. Perception is called a brain-product. So are all the "back door" spontaneities. Contrast is physiological and not psychological. Memory and recollections are the habit of the nervous system, and so is association, imagination, hallucination, instinct and spontaneous attention. The nuclear self is made up of its tensions and re-actions, and emotions are consequences not causes of bodily activities. All the movements from which the will selects are preformed in it. The combination of vibrations into musical tones is a nervous mechanism with no psychic synthesis involved. Pflüger's "spinal soul" is also due solely to mechanism. In short the "feelings" and "states" of all sorts spring out from the brain, which no physiologist would ever think of invoking so continually as a *deus ex machina*. From a description of it in chapter II and

III no one could suspect the rôle it plays later. When it is invoked to explain one group of phenomena, we are told of "currents once in which must find a way out," etc., I, 107-9; elsewhere, to explain another group, of the "cumulation of brain processes overlapping," I, 635; for yet another purpose of a "new and more violent sort of disintegration of neural matter, which now explodes at a deeper level"; or to explain the difference between sensation and imagination of an "inward molecular cohesion in our brain cells which it probably takes a sudden inrush of destructive energy to spring apart," II, 74. When a certain intensity is reached we are told that a new order of resistance arises which must be broken by a new order of force from without. We are told of "pontifical cells," of "drainage channels," "paths scooped out," "gutters," of "blocks" in the same, of "tensions" and "equalizations between any two points;" of "isomerisms" and "changes merely chemical;" of "traces," "copies" and "images;" of "glows," "tremors," "tingles," "flashes," and explosions; of "tenacity of brain substance" and "of its plasticity;" of points that "wake each other up," or how motions can become feeling, I, 146. And yet "no phrase our lips can frame is so devoid of apprehensible meaning." To use one hypothetical generic process, as Jackson uses the figure of explosions to explain epilepsies, as Meynert uses association fibres, or Spencer isomerism; or as many physiologists use electric currents, etc., or to speak in large over-all terms of neural changes, modifications and disturbances, etc., is often done in our speculative efforts to bridge the "chasm." But if we must still have tentative or provisional, physical and chemical imagery, let them be clear and consistent. Such a jumble of processes extemporized in this loose literary way are possible only in just the mental limbos physics and chemistry exist to clear up. They explain everything equally well because they explain nothing, and harmonize no better than would a random collection of choice religious imagery concerning another world and state. This is about as far from "untrameled homogeneity of terms" as can well be imagined. Such brain matter is indeed "an instrument of possibilities but no certitudes," 141. For our part we should now prefer to check this exuberance of meta-neurology, not more out of respect for the "chasm" than for recent or present morphological advances that almost inspire the hope that the beginning of the end of this degenerate interregnum is at hand.

III. Besides the many apriori feelings or conscious states and the brain states and processes, Dr. James' psychology does not drop the soul. He says he "shall take no account of soul," I, 181-2, yet adds: "I confess, therefore, that to posit a soul influenced in some mysterious way by the brain states and responding to them by conscious affections of its own, seems to me the line of least logical resistance." On this mysterious soul the separate brain processes would combine their effects. Soul is a "much despised word," but we cannot despise the great traditional beliefs that tow us soulward. All thoughts are owned. No psychology can question the existence of personal selves. We do not personify the procession of thought, but it is already personified.—I, 226-7. The ego is felt with and connects thoughts, 242. If things are to be thought together it must be in one something, although "we will not discuss the ego just yet." "I do not wish just yet to commit myself about the existence or non-existence of the ego," although it is not needed to unite Kant's manifold," p. 177-8. The physical adjustments are not all of the self of selves, but whether the *thinker* or pure consciousness immanent in each section of the thought stream, be a logical postulate like pure matter, is a metaphysical question. This is, however, a "parenthetic digression," from which the author "reverts to the path of common sense," while the obscure feeling of some "self above

the adjustments," etc., such as "subjectivity as such, of thought become its own object," or an "indivisible active soul substance" is left open.—303-5. Is the "inner nucleus of my spiritual self" the adjustments plus "a still more obscurely perceived subjectivity as such?"—319. Common sense drives us to admit an "arch ego," or at least a shepherd of past states, uniting and owning them, but perhaps itself owned in dying by another which may be the present thought vested for the nonce with synthetic power.—338-9. The popular notion of a simple, incorruptible soul is needless for explaining the phenomena "of consciousness which are all accounted for by the power of each thought in the stream to know and appropriate the others' content, and personal identity is only a perception of sameness. Of the essence of mind we know nothing. Soul is a superfluity even for forensic responsibility before God, and gives no immortality save an atom-like simplicity we do not care for. It explains nothing and guarantees nothing. The author is "free to discard the word soul from the rest of this book" save in the vaguest and most popular way, "an *anima mundi* is more promising."—I, 342-50. Yet the effort to attend may be an original force, and the author counts himself among "the believers in a spiritual force," although his reasons are all ethical and "hardly suited for introduction into a psychological work," I, 454. [See also 499, 51]. "A presiding arbiter" seems set aloft in the mind and distinguishes good from bad thoughts as they arise, related to the latter as ethics to history. Omitting intermediate allusions, we are told later, II, 518, where to draw "the true line between passive material and the activity of the spirit." Again, II, 574-5, "what the heave of the will betokens metaphysically, and what the effort might lead us to infer about a will power distinct from motives, are not matters that concern us yet." "Questions as momentous as the very existence of spiritual causality, or vast as that of the very existence of universal predestination, or free will depend on its interpretation," *i. e.* of effort. "How thinking exists as a special immaterial process along side of material processes," the author does not fully understand, 571-1, and decides for freedom; "but since the grounds for his opinion are ethical rather than psychological, he prefers to exclude them from the present book," 573.

Such scattered references, to which must be added the one quoted, I, 696, concerning the spirit of the dead French doctor, it is impossible to co-ordinate. This outspoken writer becomes strangely timid, apologetic, self-conscious and self-contradictory here. He recurs over and over again to this in the form of "ultra cerebral conditions," "transcendental thinking agent," the "I that knows the me," the same brain subserving many conscious selves," nowhere stalwartly asserting his pneumatology, but ostentatiously refusing to ring up the transparent metaphysical curtain behind which it is usually seen, and playing bo-peep with it with if, but and perhaps. That he is even unconsciously all through the book only building a new stage and setting a fit scene in modern science-town for the old timeless, spaceless, deathless soul of eschatology, we have no right to say in view of the many unwonted, masked reserves, but every intelligent reader will see not only that there is nothing inconsistent with this view, but that this is the only possible standpoint from which the book has unity or cohesion. Deny the knowledge of passing thought, a matter left very dark by the author, and we must have a soul to mediate union between psychic elements. *Seelensucht* is the key to what is left undone as well as to what is done. His abhorrence of mind-stuffists and associationists, the slight treatment of instinct, memory, and the lower senses, the special lines of interest to which he confines himself in treating vision, hypnotism and automatism, the almost total omission of pleasure and pain, of hearing, touch, taste and smell, and of anthropological psychology, and the

strange neglect of fundamental biological principles, etc., are now all explained. Some of the most lusty branches of the psychological tree are neglected or mutilated in the interest, consciously or unconsciously, of the author's strong undertow of animistic propensities. We, too, believe in soul, but not in a way which interferes with causation or the conservation of energy. As consciousness, he thinks, need only tip molecules, so soul needs, it is pleaded, only to prolong the fixation time of spontaneous attention. If consciousness can tip molecules, what of the "chasm" so orthodoxly emphasized between brain and psychic state; may it not tip a table, at least if it be accurately enough balanced; and how is its force applied, or is the brain "boxed and blanketed" like a medium's cabinet to cunningly defy our peering curiosity; was it with this consciousness that physical miracles of old were wrought; can it act telepathically? There is at least nothing against any or all of these. To appeal to consciousness as a physical cause is to invoke the chaos and old night of spiritualism. Holding firmly to the views of it we expressed in the first number of this journal (see vol. 1, No. 1, p. 145), we cannot accept the smallness of this baby (I. 144), as any excuse for its illegitimacy or its depraved heredity.

This is thorough and through a "tendence" book. Its very inconsistencies and incoherencies not only reflect but greatly magnify all the unrest, distraction and conflicts of the present hour. The author is a veritable storm-bird, fascinated by problems most impossible of solution, and surest where specialists and experts in his own field are most in doubt, and finding it very hard to get up interest in the most important matters, if settled and agreed to, even to state them well. Open questions haunt and taunt him, and sometimes become almost neuroses. Although his partizanship sometimes lacks poise, repose and even philosophic dignity, yet in its most extreme and blinding intensity it often becomes almost magnificent, even where it is neither science nor philosophy. Assuming as the three fundamental postulates whose foundations he will not explore, brain states, conscious states and an ulterior self, and abhorring as the very powers of darkness from the pit the words unconsciousness, unknowable, if not even unknown, in all their application, his gnostic passion will not be put off with any appeal to an higher and future synthesis. All this is "spiritual chloroform," a "device for making a luxury of intellectual defeat." "Better live on the ragged edge, better gnaw the file forever," even though this be a "constitutional infirmity."—I, 179. Where can be found a better type of what Hegel's phenomenology characterizes as the stage of "unhappy consciousness?" This distraction is reflected in the form and style of the book, which is at every point in no less strange contrast with the work of the ordinary text-book maker, than it is with the patient investigations of the laboratory, which must seem both alike tedious to such an author. There are many brilliant and original pages, hundreds of pages of admirably selected quotations and translations, a large train of footnotes and afterthoughts, often most happy and helpful, and often undigested and unassimilated, representing successive stages of ripeness or information, so that occasionally errors carry their own medicine on the same page (*e. g.*, Wiesmann's corrective, not realized, of necessary truths; G. Allen's point about idiosyncrasy, 631, or Romanes, 678, the bearings of which are not fully seen or felt.) The book could have been somewhat lessened in size had the author recorded the results of private thinking instead of so often writing himself clear. The further transformations of change and growth, which are not complete, or the further adjustments between the three principles may considerably revise the present conclusions, and we shall await the author's metaphysics and ethics with interest later. The ripeness, repose and perfect mental digestion of Lotze, who abhorred every

flavor of rococo, eclecticism or extravagance of expression; or of our own Charles Peirce, who burns his own smoke, and talks with the rifle rather than with the shot gun, or water hose, are most contrasted with this author, and most desired in this confused and distracting field.

For our part we do not wish to balance and foreclose accounts between brain and soul yet. Even to attempt this just now, when from the neural and also from the psychic side both change, progress and promise are greater than ever before, is worse than waste, it is philosophic and scientific precocity and lack of self-control. But to force an adjustment between mind and matter by excluding all psychic elements from the simplest forms and functions of organisms, and making a Cartesian surrender to physiological mechanism, calculated to lessen psychological interest in these fields, on the one hand, and ascribing a causative agency to conscious states in a way to interfere with the conservation of energy and the belief in the perfect reign of law and order in the brain on the other, is, we believe, bad science, bad philosophy, and bad religion. In place of this tortured and tortuous dualism, or triadism, both tendency without and temperament within incline us to repose in faith in a future monistic synthesis, in which both law and freedom, mind and matter, immanence and transcendence will lose their partial aspects and stand revealed as parts of a sublime whole. The last few years have seen great changes in the spirit and temper of scientific workers, and all the currents set in this direction. Whatever may be true of the routine professors, or of the popular writers, it may already be said (in the direction of the phrase "the undevout astronomer is mad") that scientific investigation discovers, and men of real research work, with a spirit of reverence, and a sense of unity and law at the root of things and pervading every action and corner of space, that is religious to the core, in every sense which the best philosophy of religion makes basal. They live and work, often in obscure places in the field of science, animated by belief in future syntheses, both small and great. If the ultimate synthesis be monistic, it need not be so much the monism of contemporary schools as the modern psychological and even ethical equivalent of the sublime monotheism of the Old Testament, liberally and reasonably interpreted. Psychology, we believe, is even to be the means of rescuing religious oracles from degradation and re-revealing them as sublime ethnic verbal editions of God's primitive revelation in his works. It will also show what is in man, and may some day become veritable anthropology, the science of man in fact as well as in name, a gospel of love and work, where the heart is not subordinated to the head, and the emotions are not slighted, or the great ethical lesson of hereditary good and ill, psychogenesis and adolescence doubted and disparaged. Instead of the modern degenerate and exiguous forms of the originally most stimulating "theory of knowledge" now grown so scholastic and debilitating if not positively harmful in occasional teachers, pupils and institutions in ways we shall try to describe later, the new psychology of the present and future is based less upon introspection than upon observation, experiment and experience, individual and ancestral. *Sum, ergo cogito*, might have been one of its texts. The text-books it needs are illustrated by Jastrow's recent little hand-book concerning reaction times, in which the main facts and conclusions in the field are conveniently presented and not scattered among the various speculative questions on which they are thought to have bearing. This method involves more labor with details and is plainer and humbler, but it is this method of self-control and subordination, carefully adhered to also by this Journal, that has commended the scientific method in psychology to the confidence of conservative administrative boards, and by which its recent remarkable academic extension in the universities and colleges

of this country have been made. It is premature speculative views that these boards justly fear. A book so individual in its style and method will inevitably invite attention more and more to the personality of the author, it is just these elements and idiosyncrasies that will be valuable material for the inductive methods of the future in psychology.

In what we have said we have been guilty, however, of looking a gift horse in the mouth. Many were too busy with enlarging the field by investigations; others lacked the range of view, or literary style, so that the advent of a good text-book maker has been longed for. Dr. James lacks the just proportion of Professor Ladd, but opens to the English reader much new ground, and his familiarity with many of the facts he does describe is greater, but they are strung on theory like Dewey (as they are not in Ladd, whose objectivity is admirable), and there is much less vituperativeness than in Bowne. Dr. James is, however, more stimulating and suggestive than any of them. His breadth and breeziness and large philosophy and comparative standpoint is now one of the chief needs in this field. Even to attempt to harmonize old and new, science and introspection is an inspiration. Those subjects that are treated *con amore* are admirably presented (as *e. g.* the optical parts), and there is a literary form that sets off everything which none of the rest can equal. The author's experience as a teacher has been long and varied; his love of his subject is deep. His acuteness and vigor of intelligence and independence are rare. From dryness and routine he is as far as it is well possibly for a professor to be and still keep in academic traces. Moreover, this is not one work among many of a worn writer, but however much he may write later, this will remain the one life book of an able, well-trained and mature man, who has gathered himself well together, re-edited all former papers, balanced accounts with the literature on his lines well up to date, and here deliberately indulges not only without reserve but with *Ausgelassenheit* in what Lotze called the supreme felicity of self-expression, which temperament, power of language, and his favorite subject of selfhood and psychic state combine to make as full and utter as self-expression can well be. Both merits and defects were never more extreme. The critic must blow hot and cold, because "where it is good it is very good and where it is bad it is horrid." The good, however, is so very largely preponderant that many if not most of the gravest errors and defects might be eliminated in a radically revised edition. It is in the earnest hope that this will be done that we have dwelt so fully upon them. There is too little claim put forth for originality in some fundamental matters, and the combination and proportion of parts could not help being new in many particulars. We are glad to give to an effort we have ourselves found so stimulating the space at least it deserves. It marks a distinct advance in the teaching and study of the subject in this country. It is on the whole and after all the best work in any language, and we earnestly advise every one with the least interest in psychology to own and study it.—[Ed.]